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MAY 14, 1984

CHEMICAL & ENGINEERING

NEWS

rst-quarter earnings:
pward match continues
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Dutch revive gas export drive

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Cover: Gasunie engineer checks readings in world's largest natural gas compressor station at Ommen, the Netherlands

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CHEMICAL & ENGINEERING NEWS

MAY 14, 1984

News of the Week

■ **Chemical firms that supplied agent orange to the government agree to pay $180 million to settle lawsuit but admit no liability.** Page 6

■ **EPA spells out penalties for violators of hazardous waste rules under RCRA.** Page 7

■ **U.S. aerosol industry increased output 8.9% in 1983 over the previous year.** Page 7

■ **Biotechnology firms face another issue: those who oppose genetic research on safety grounds.** Page 8

■ **Ciba-Geigy continues to beef up its U.S. pigments business.** Page 8

Business

Increases in chemical earnings continued through the first three months of 1984 as sales rose along with productivity. **Page 10**

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Chemical Industry Earnings Retain Vigor in First Quarter

Basic chemical firms record big gain over first-quarter 1983; chemical segments are bright spot for energy firms and diversified manufacturers

David Webber, C&EN New York

The chemical industry earnings recovery more than retained its vigor in the first quarter of 1984. Swelling sales volumes combined with the operating efficiencies that were solidified last year to infuse health to the bottom line of the industry's income statements. The only important twinge left over from the recession was pricing, which improved only grudgingly in the first quarter.

The result was big increases in earnings all around. For 30 basic chemical producers, net income rose 70% on a sales revenue increase of 13% in the first quarter, according to C&EN's latest survey of major companies.

A group of 26 diversified manufacturers with significant chemical operations recorded an overall earnings jump of 77% on a revenue increase of 11%. And 16 oil and gas firms reported a 33% boost in income on a 4% rise in sales.

The rosy numbers, coming after the near-doubling of earnings in fourth-quarter 1983, prompted a round of dividend increases and stock splits at a number of companies. Earnings per share values rose sharply as well, although some of the increases were due to companies' repurchasing and retiring substantial amounts of stock in some cases.

In general, plastics and agricultural chemicals led the recovery among chemical producers. The sharpest improvement was registered by Celanese, which moved from 24th to eighth on the list of earnings leaders for the quarter with a 633% rise in net income. Celanese chief executive John D. Macomber attributes the gain to fibers, engineering resins, and lower breakeven points. Hercules, which reported a 35% increase in net income, said most of its gain was generated by its polypropylene resins and fibers businesses.

At Monsanto, where overall earnings rose 73%, polymer products operating income ballooned 155%. National Distillers & Chemical, with a 91% profit rise, benefited primarily from the polyethylene and other operations of its U.S.I. subsidiary, chief executive Drummond C. Bell says.

Despite the cold and wet weather of the first quarter, most producers of agricultural chemicals did well compared to their performance in last year's market, which was hurt by the government's payment-in-kind (PIK) program. In earnings statements, such chief executives as Edward Donley of Air Products & Chemicals and J. Peter Grace of W. R. Grace cite the turnaround in agricultural chemicals as a prime factor in the rise in earnings. At International Minerals & Chemicals, where fertilizer is the principal business line, earnings rose 26%. Modest fertilizer price increases helped, notes IMC president George D. Kennedy, though he says further increases are needed to achieve a satisfactory return on investment.

At Monsanto, agricultural and nutritional products operating earnings rose 34%. "Our agricultural

Chemical industry leaders for the first quarter

Sales

Rank		$ Millions	Rank 1983
1	Dow Chemical	$2916.0	1
2	Union Carbide	2393.0	2
3	Monsanto	1732.0	3
4	W. R. Grace	1497.3	4
5	PPG Industries	1035.8	5
6	American Cyanamid	938.6	6
7	Celanese	837.0	7
8	National Distillers	747.2	9
9	Hercules	619.0	8
10	Rohm & Haas	548.1	11

Earnings[a]

	$ Millions	Rank 1983
Monsanto	$175.0	1
Dow Chemical	122.0	2
Union Carbide	107.0	4
PPG Industries	74.1	3
American Cyanamid	56.5	11
Rohm & Haas	56.3	5
Hercules	47.0	8
Celanese	44.0	24
Air Products	36.6	7
W. R. Grace	31.9	6

Profitability

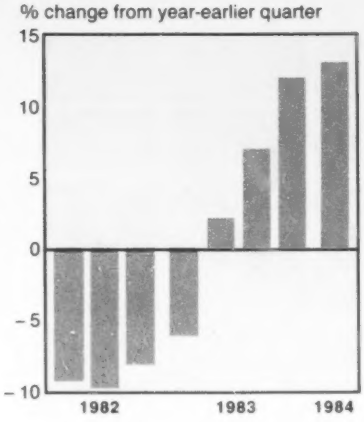
	Earnings as % of sales	Rank 1983
International Flavors	15.2%	1
Freeport McMoRan	10.9	2
Loctite	10.5	6
Nalco Chemical	10.4	3
Rohm & Haas	10.3	7
Monsanto	10.1	8
Petrolite	8.2	5
Air Products	8.1	9
Lubrizol	8.0	4
Hercules	7.6	16

a After taxes. **Note:** For 30 companies listed on page 12.

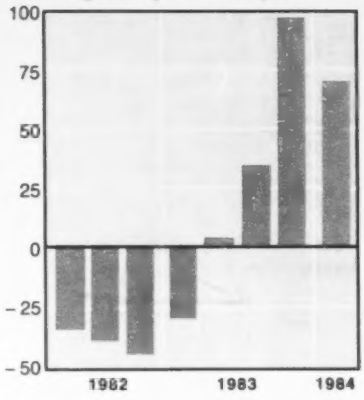
Chemical industry 1984 first-quarter results

- Sales increased 13%
- Earnings shot up 70%
- Profit margins hit 5.7%
- Production climbed 11%
- Prices rose nearly 3%

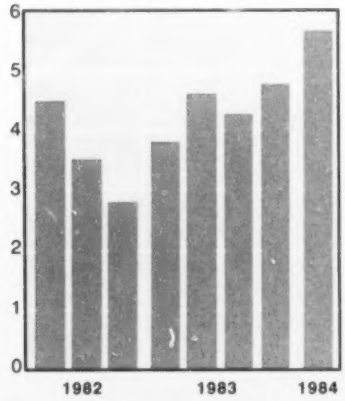
Sales
% change from year-earlier quarter



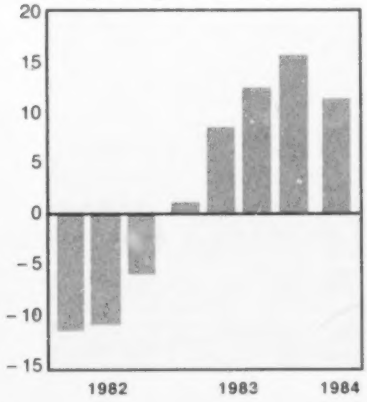
Earnings
% change from year-earlier quarter



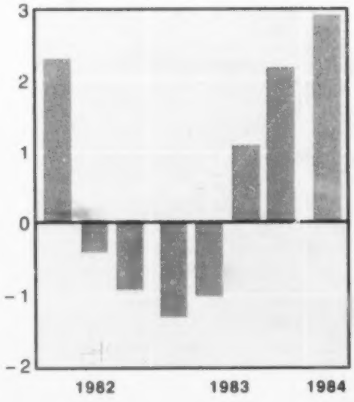
Profit margins
After-tax earnings as % of sales



Production
% change from year-earlier quarter

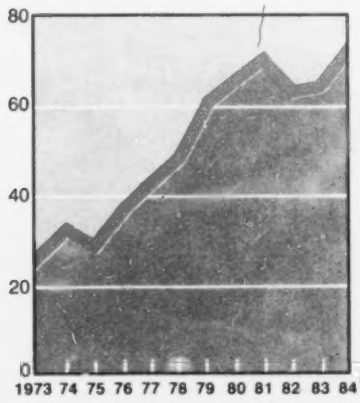


Prices
% change from year-earlier quarter

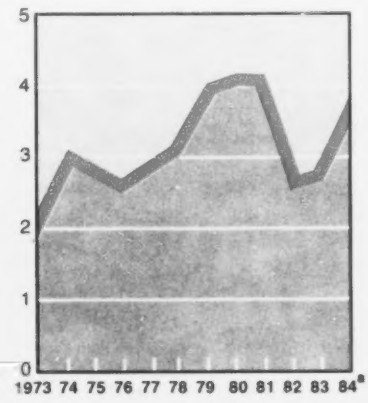


Sales in 1984 will rise 12% and earnings will increase 35%, moving chemical profitability up sharply

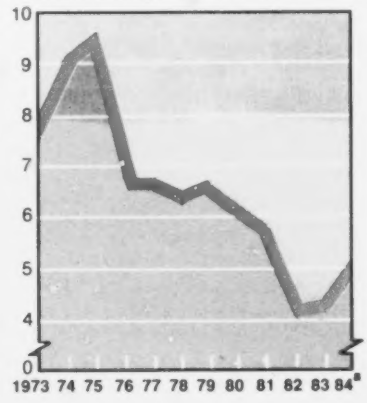
Annual sales
$ Billions



Annual earnings
$ Billions



Annual profit margins
After-tax earnings as % of sales



a C&EN estimates. **Note:** All sales, earnings, and profit margin data are based on the combined results of the 30 leading chemical companies listed on page 12.

Chemical company earnings rose sharply in first quarter

	FIRST-QUARTER 1984						12-MONTH RUNNING DATA			
	Sales	Earnings[a]	Change from 1983		Profit margin[b]		Change from 1983		Profit margin[b]	
	($ millions)		Sales	Earnings	1984	1983	Sales	Earnings	1984	1983
Air Products	$ 452.1	$ 36.6	7%	38%	8.1%	6.3%	6%	31%	7.5%	6.0%
American Cyanamid	938.6	56.5	14	108	6.0	3.3	6	57	5.4	3.6
Celanese	837.0	44.0	9	633	5.3	0.8	12	def	4.5	def
Chemed[c]	81.4	5.0	34	34	6.1	6.1	17	22	6.4	6.1
Crompton & Knowles	60.0	1.8	10	45	3.0	2.3	11	57	2.9	2.0
Dow Chemical	2,916.0	122.0	13	126	4.2	2.1	9	115	3.4	1.7
Essex Chemical	44.1	1.9	7	4	4.3	4.5	10	−56	1.7	4.4
Ethyl	418.1	24.7	6	22	5.9	5.1	10	19	6.6	6.0
First Mississippi	72.1	4.8	53	187	6.6	3.5	23	−14	4.8	6.9
Freeport-McMoRan	202.7	22.1	−1	5	10.9	10.3	4	1	11.8	12.2
H. B. Fuller	104.8	1.6	13	−16	1.5	2.0	23	45	3.1	2.7
W. R. Grace	1,497.3	31.9	11	177	2.1	0.8	3	6	2.8	2.7
Hercules	619.0	47.0	14	35	7.6	6.4	5	−17	3.2	4.0
International Flavors	123.5	18.7	2	2	15.2	15.1	6	58	6.8	4.5
International Minerals	388.8	26.8	5	26	6.9	5.7	4	1	10.6	10.9
Loctite	62.6	6.6	13	38	10.5	8.6	4	26	5.9	4.9
Lubrizol	212.3	16.9	14	51	8.0	6.0	12	59	8.9	6.3
Monsanto	1,732.0	175.0	17	73	10.1	6.8	12	68	9.5	6.4
Morton Thiokol	541.3	28.7	21	23	5.3	5.3	6	43	6.0	4.4
Nalco Chemical	175.6	18.3	10	11	10.4	10.3	58	82	7.2	6.2
National Distillers	747.2	28.6	27	91	3.8	2.6	16	28	6.5	6.0
Olin	526.5	27.2	11	20	5.2	4.8	37	4	3.2	4.2
PPG Industries	1,035.8	74.1	21	69	7.2	5.1	15	46	4.9	3.9
Pennwalt	257.4	9.5	8	50	3.7	2.7	6	95	4.8	2.6
Petrolite	72.7	6.0	1	−6	8.2	8.8	−1	−20	7.5	9.3
Reichhold Chemicals	209.3	5.5	17	32	2.6	2.3	11	52	6.8	5.0
Rohm & Haas	548.1	56.3	19	67	10.3	7.3	5	88	6.6	3.7
Stauffer Chemical	418.8	16.0	15	−5	3.8	4.6	7	63	6.8	4.4
Union Carbide	2,393.0	107.0	9	157	4.5	1.9	6	12	2.6	2.4
Witco Chemical	366.7	14.7	14	38	4.0	3.3	10	56	3.9	2.8
Total 15 largest firms	**$15,620.8**	**$ 875.5**	**14%**	**83%**	**5.6%**	**3.5%**	**9%**	**48%**	**4.4%**	**3.3%**
Total second 15 firms	**$ 2,434.0**	**$ 160.1**	**10%**	**22%**	**6.6%**	**5.9%**	**9%**	**34%**	**7.0%**	**5.7%**
GRAND TOTAL	**$18,054.8**	**$1035.6**	**13%**	**70%**	**5.7%**	**3.8%**	**9%**	**44%**	**4.9%**	**3.7%**

a Excludes all significant extraordinary and nonrecurring items. b After-tax income as a percentage of sales. c Includes National Sanitary Supply, Fabrilife Chemicals, and Twirl Corp., all acquired in fourth-quarter 1983. No pro forma comparison.

products business improved from an acceleration of growth in worldwide sales of Roundup herbicide and from increased sales of Lasso herbicide and associated product mixes," chief executive Richard J. Mahoney says. Agricultural products accounted for 54% of the company's operating income in the first quarter.

Other companies reporting strong gains stemming from the agricultural market were Pennwalt and Rohm & Haas, which note that increasing sales volumes were led by shipments of its major herbicides. But agricultural chemicals were not assurance of success. Stauffer Chemical recorded one of the few earnings declines in the first quarter, a 5% drop, because of slower than expected recovery by the corn herbicide market. The nation's cornbelt was the area most affected by the early spring's inclement weather.

There was plenty of strength in specialty chemicals operations, although not on the same scale as that of overall chemical performance. Morton Thiokol, for instance, which registered a 23% earnings increase overall, says operating earnings of its specialty chemicals segment jumped 47% on the strength of sales of electronic chemicals, sodium borohydride, and biocides. Net income was up 51% at Lubrizol and 38% at Loctite.

Signs of the spreading recovery could be seen in the improvement of Air Products' industrial gases operation, which had been held back by the sluggishness of the steel industry. And Union Carbide, which had been lagging the rest of the major chemical firms, recorded a 157% increase in net income in the quarter. "We feel good about this

Energy firms benefited greatly from chemicals

	First-quarter earnings on chemical operations[a]		
$ Millions	1984	1983	% change
Exxon	$121	$32	278.1%
Gulf	49	−39	nm
InterNorth	5	0	nm
Mobil	8	−14	nm
Shell	21	19	10.5
Standard Oil (Ind.)	59	18	227.8

a After-tax earnings. nm = not meaningful.

quarter," says chief executive Warren M. Anderson. "The current results put us firmly back on the earnings recovery track."

Problems in certain areas remain, on the other hand. American Cyanamid, for instance, registered a 106% profit rise overall, but thanks mostly to pharmaceuticals; the company's chemical group suffered because of lower earnings from oil-field chemicals. And Monsanto, despite its overall gains, notes that the laggardliness of capital goods markets continued to hold back its Fisher Controls unit, which reported a 13% decline in operating profit.

The diversified firms with chemical operations did even better than basic chemical producers. Among the bigger improvements, net income was up 375% at Uniroyal and 84% at Du Pont, which alone accounted for some 15% of the group's aggregate earnings in the quarter. At many firms, the chemical segment was one of the brightest spots, if not the brightest, on the corporate roster.

At Beatrice Foods, chemical operating earnings rose 32%, but corporate income declined 3%. At Du Pont, operating profit rose 206% for industrial and consumer products, 82% for fibers, 154% for polymer products, and 39% for agricultural and industrial chemicals. At B. F. Goodrich, which recorded an overall deficit in first-quarter 1983, polyvinyl chloride operations rose from a $19 million loss to a $7 million profit. Specialty chemicals' net increased 88%. NL Industries, which managed a minimal profit, reported chemical operating income up 31%. And Uniroyal saw operating profit of its chemical, rubber, and plastic materials segment shoot up 175% for the quarter.

For the energy companies, chemicals provided very welcome additions to income. Exxon's after-tax chemical earnings soared 278%; Standard Oil (Ind.)'s, 228%; and Shell Oil's, 11%. At the same time, after-tax chemical segment profit moved from a $39 million deficit in first-quarter 1983 to a $49 million net this period for Gulf; from a $14 million loss to an $8 million gain for Mobil; and from no profit to $5 million in income for InterNorth. □

Energy earnings up a third, diversified profits soar

	% chemical sales	Sales ($ millions)	Earnings[a] ($ millions)	Change from 1983 Sales	Change from 1983 Earnings	Profit margin[b] 1984	Profit margin[b] 1983
OIL AND GAS COMPANIES							
American Petrofina	15%	$ 547.9	$ 10.3	29%	2964%	1.9%	0.1%
Atlantic Richfield	10	6,742.4	395.1	7	20	5.9	5.2
Exxon	7	24,906.0	1475.0	5	39	5.9	4.5
Gulf	6	7,475.0	220.0	8	21	2.9	2.6
InterNorth[c]	7	1,999.8	133.5	47	31	6.7	7.5
Mobil	4	15,000.0	380.0	5	52	2.5	1.7
Occidental Petroleum	10	3,900.0	92.7	−20	836	2.4	0.2
Phillips Petroleum	16	3,960.0	193.0	9	50	4.9	3.5
Shell Oil	16	4,956.0	326.0	7	33	6.6	5.3
Standard Oil of California	4	7,270.0	378.0	4	22	5.2	4.4
Standard Oil (Ind.)	10	7,500.0	594.0	0	49	7.9	5.3
Standard Oil (Ohio)	5	2,924.0	381.0	6	8	13.0	12.7
Sun Co.	3	4,210.0	143.0	13	59	3.4	2.4
Tenneco	7	3,877.0	155.0	7	40	4.0	3.1
Texaco[d]	4	9,900.0	276.0	−2	−13	2.8	3.2
Unocal (Union Oil)	11	2,680.0	180.1	9	40	6.7	5.2
DIVERSIFIED MANUFACTURERS							
Allied	23	2,800.0	133.0	12	39	4.8	3.8
Aluminum Co. of America	11	1,483.3	97.8	30	nm	6.6	def
Beatrice Foods	5	2,200.0	78.0	−4	−3	3.5	3.5
Borden	18	1,096.2	33.9	17	49	3.1	2.4
Borg-Warner	24	947.8	50.2	17	41	5.3	4.4
Diamond Shamrock	23	1,142.1	59.5	34	1184	5.2	0.5
Du Pont	43	9,330.0	373.0	7	84	4.0	2.3
Eastman Kodak	23	2,140.8	157.8	1	219	7.4	2.3
Engelhard[e]	13	642.7	−15.7	5	def	def	2.7
FMC	37	953.4	42.8	12	36	4.5	3.7
General Electric	13	6,580.0	485.0	8	14	7.4	7.0
Georgia-Pacific[f]	11	1,631.0	51.0	15	70	3.1	2.1
B. F. Goodrich	44	856.2	9.9	17	nm	1.2	def
Kaiser Aluminum[g]	19	814.1	144.6	26	nm	17.8	def
Koppers	34	349.6	−8.7	23	def	def	def
Eli Lilly	24	894.8	146.7	8	8	16.4	16.4
3M	15	1,875.0	175.0	10	11	9.3	9.2
Merck	19	848.6	125.1	10	10	14.7	14.8
NL Industries	24	323.8	0.9	−13	nm	0.3	def
Northwest Industries[h]	24	447.9	14.6	34	873	3.3	0.4
Pfizer	11	919.8	127.7	1	15	13.9	12.2
Tyler	32	216.9	4.0	31	101	1.8	1.2
Uniroyal	29	539.8	17.1	20	375	3.2	0.8
U.S. Steel[i]	6	4,800.0	171.0	23	nm	3.6	def
Upjohn	16	563.0	65.0	16	43	11.5	9.4
Vulcan Materials	31	202.4	-6.7	31	nm	3.3	def

a Excludes major nonrecurring gains or charges to earnings. **b** After-tax income as a percentage of sales. **c** Excludes results of Belco Petroleum in first-quarter 1983. **d** Excludes Getty Oil earnings of $45 million for March 1984. **e** Includes pretax charge of $63.1 million for write-off of certain precious metals refining assets and employee termination expenses. **f** Includes gain of $27 million from settlement of natural gas contract dispute. **g** Includes pretax gains of $44.7 million and negative tax provision of $31.9 million in first-quarter 1983. **h** Restated to exclude Microdot, sold at end of 1983. **i** Includes pretax gains in first-quarter 1984 of $343 million from sale of assets. **nm** = not meaningful. **def** = deficit.

Controversy Surrounding Synfuels Corp. Intensifies

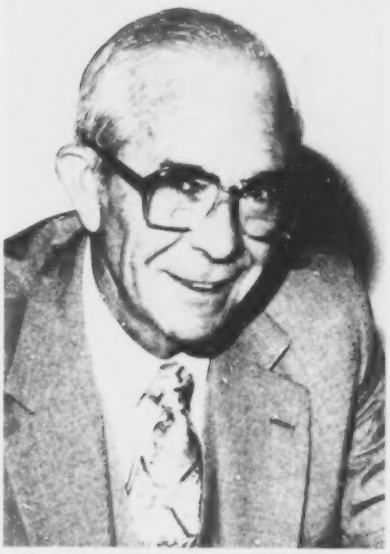
Recent resignation of board members, including president, growing criticism in Congress have hampered corporation's efforts to fund projects

David J. Hanson, C&EN Washington

U.S. Synthetic Fuels Corp. (SFC), set up nearly four years ago by the Carter Administration to help relieve U.S. dependence on foreign energy supplies, has an unenviable record. Criticized for years as not doing anything, the quasi-independent, aid-granting foundation recently moved quickly to set up financial aid for 11 projects—only to be stopped by the controversial resignations of four of the seven members of its board of directors, including its president.

In addition, some members of Congress are trying to wrest away the funds set aside for synthetic fuels assistance. Other members want a total moratorium on project assistance by SFC until Congress can come up with and approve a comprehensive synthetic fuels policy.

Scrutiny of SFC intensified recently because of the controversy surrounding the resignation of Victor M. Thompson Jr., president of SFC. Thompson stepped down from the $135,000-per-year job amid increasing criticism of his dealings with Belton K. Johnson, one of the investors in a Texas tar sands project under consideration by SCF. Thompson apparently had approached Johnson in 1982 for help in supporting the financially ailing Utica Bankshares Corp. of Tulsa, Okla., when Thompson was chairman and chief executive officer of the holding company and while Johnson's project was in a critical stage of consideration by SFC. Thompson took part in SFC decisions regarding the fate of Johnson's project, Chaparrosa Ranch Tar Sands, while the other financial negotiations were in progress, an action considerered unethical.



Thompson: leaves amid ethics probe

Thompson's questionable dealings came to light just two weeks after he was appointed president of SFC in February. The Securities & Exchange Commission charged that the Utica company had overstated its earnings and understated losses while Thompson was its chairman. As more and more details came to light, Thompson revealed he was part of the SEC investigation, and eventually resigned. Thompson insisted he had done nothing wrong and that the possible sale of bank stocks to Johnson was in no way linked to votes on Johnson's synthetic fuels project.

But even the resignation has been controversial. Thompson, after resigning as SFC president, stayed on the board of directors an additional day and voted to approve an award to a Dow Chemical medium-Btu gas project and letters of intent to support the Great Plains Gasification project and the Northern Peat project—nearly $1.8 billion in price guarantees. Thompson resigned from the board the next day.

That extra day spawned severe headaches for SFC. Congressional critics of SFC say it appears as if Thompson stayed on to hurry some projects through before the board was left without a quorum. Rep. Michael Synar (D.-Okla.) says, "It looks like they rushed to get money out the door before incapacitating themselves. At a minimum, it shows a complete disregard for the maintenance of public trust and confidence in SFC's operations." Rep. Howard Volpe (D.-Mich.) calls the action unconscionable and showing "utter disregard for the public."

So now, in addition to the SEC investigation into the Utica Bankshares situation, the House Government Operations Energy Subcommittee will hold a hearing to examine the propriety of SFC's committing funds during that last day of Thompson's board membership. SFC itself, apparently trying to keep its public image from getting any worse, has asked the Justice Department to begin a criminal investigation into Thompson's activities.

Unfortunately for SFC, this scandal is only the latest of its worries. Despite the corporation's increased activity in aiding synthetic fuels projects, Congress had been moving to put some heavy restrictions on SFC's independence. The most prominent of these is a bill, H.R. 4098, introduced by Volpe and cosponsored by about half the House, that would freeze SFC spend-

ing until Congress approves some comprehensive synthetic fuels strategy. An identical bill is being considered in the Senate: S. 2358, which was introduced by Sen. William Proxmire (D.-Wis.). The bills' sponsors believe that in this period of enormous budget deficits, it is fiscally irresponsible to allow SFC to commit billions of dollars to unproven projects before there is some kind of overall national synthetic fuels strategy.

In spite of this Congressional acrimony, or, perhaps, because of it, SFC has made some significant awards in the past months. It has an overall plan designed to commit the entire $14.7 billion available to the corporation to various projects by the end of the first quarter of 1985. As of last month, SFC had either made commitments for or signed letters of intent to support 11 projects for financial aid totaling about half that amount. Further awards, however, will be delayed until at least one more member of its board is approved by the Senate. The resignation of Thompson left the board with only three members, one short of the number required to conduct business.

This approval of government assistance for projects has been slow in coming. One of the early criticisms of SFC was that its proposal requirements were so stiff that few projects, if any, had a chance to qualify. Now that projects are receiving aid, complaints have shifted to ones of uncontrolled spending. SFC chairman Edward E. Noble Jr. says SFC has been very careful about putting its program in place, and the proposals now receiving awards are strong, promising projects.

The first of these was the small Cool Water coal gasification project in Daggett, Calif., sponsored by a group of seven firms, including a Japanese consortium. A $120 million price guarantee for the project made by SFC last September met immediate criticism because the small capacity of the facility, about the equivalent of 4300 barrels of oil per day in gas, is more in line with that of a large demonstration plant, rather than the full-size commercial ventures SFC is expected to support. After this beginning, however, SFC was quiet until last month.

In early April, SFC initiated about $4.4 billion for six proposals, including projects for oil shale, gasification, tar sands, and peat. These came almost immediately after chairman of the House Energy & Commerce Committee, John Dingell (D.-Mich.), first urged then-SFC president Thompson to resign because of the SEC investigation. At that April meeting, however, the SFC board of directors voted their full confidence in Thompson and he stayed on. Another major move was made later in the month, when SFC increased the number of commitments to 11, raising the total support to about $7.5 billion.

One of the most controversial decisions was a second award of assistance to the Great Plains coal gasification project in Beulah, N.D. That project already had received a $2.02 billion loan guarantee (being managed by SFC) from the Department of Energy, but its owners had declared more support was needed because of declining oil prices. After receiving a special proposal from the Great Plains project, the SFC board voted to provide up to $790 million in additional price guarantees.

Although the SFC timetable calls for awarding assistance to about a dozen projects by year's end, this is in doubt. The three-member board cannot vote on new awards—indeed, cannot even meet—because it lacks a quorum. President Reagan has said that he will nominate Eric Reichl to the SFC board, but it could be months before the nomination is actually made, and even longer before Senate confirmation. Reichl is a chemical engineer who has worked in the oil and coal industry for more than 40 years.

The SFC officers had hoped that the corporation's increased activity this year would take some of the attention away from its previous inactivity and current personnel problems. However, that doesn't seem to have happened. Congress, led by Volpe and Proxmire, appears determined to halt SFC from spending even the funds it already has promised and to gain more Congressional control over future actions. The large, independent corporation envisioned in 1980 by President Carter to help the U.S. become more independent for energy supplies is likely to remain a vision, the victim of fickle oil prices, high alternative energy costs, and the federal deficit. □

Synfuels Corp. has made at least preliminary commitments to 11 projects in the past six months

Project/ product	Production capacity[a]	Resource	Amount and type of SFC assistance
Cathedral Bluffs/ shale oil	100,000	Colorado shale	$2.18 billion loan & price guarantees
Cool Water/ medium-Btu gas	8,600	Western bituminous coal	$120 million price guarantee
Dow Syngas/ medium-Btu gas	5,172	Western subbituminous coal	$620 million price guarantee
Forest Hill/ heavy oil	1,870	Texas heavy oil	$60 million loan & price guarantees
Great Plains/ high-Btu gas	23,100	North Dakota lignite	$790 million price guarantee[b]
HOP Kern River/ heavy oil	3,891	California heavy oil	$100 million loan & price guarantees
Kentucky Tar Sands/ bitumen	5,600	Eastern tar sands	$543 million price guarantee
Northern Peat Energy/ peat-derived fuel	2,745	Maine peat	$365 million loan & price guarantees
Seep Ridge/ raw shale oil	1,000	Utah shale	$45 million loan & price guarantees
Union Oil Shale I/ upgraded shale oil	10,400	Colorado shale	$400 million price guarantee[c]
Union Oil Shale II/ upgraded shale oil	42,152	Colorado shale	$2.7 billion price guarantee

a Barrels of oil equivalents per day. b This is in addition to $2.02 billion loan guarantee from Energy Department. c Transferred program from Energy Department. **Source:** U.S. Synthetic Fuels Corp.